Evaluation Study

ITLS 6530

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Team: AT&TW:

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**Introduction:**

PowerPoint, when utilized properly, can become an effective instructional delivery method. Of course, design aesthetics that are typical to PowerPoint presentations, such as awareness of layout, highly visual slides, limited amount of text per slide, and effective use of paragraphing and/or bulleting of text should still be employed. Due to these design considerations, it is appropriate to select subject matter which will render itself easily to them.

**Content:**

The subject matter is both the rules and tools of composition. The rules of composition as are as follows: purpose, walk the scene, and perspective. The tools of composition are: simplicity, lines, monotony and disruption, framing, rule of thirds, and balance and symmetry. This subject matter was selected as the real-world problem, as taking pictures is a common place, casual activity (either with camera phones, SLRs or traditional point-and-shoot) for many individuals. Despite how common taking photo is, most average users of a camera lack knowledge about the fundamentals in taking photos. This was clearly illustrated in a comment made in the Post-Instructional Survey by one of our learners when he remarked that it was frustrating that people don’t know how to take photos, as evidenced by the poor photos that strangers would snap of him and his family on vacation.

The research question to guide the creation of a treatment and control group is: “If a student is given assessment questions throughout the instruction, they are more likely to retain and understand that information and perform better on a post-test than if they are simply presented with all the information and then only tested at the end of the instruction.” It is our hypothesis that learners who are given multiple opportunities throughout the instructional content will perform better on a final assessment. With this research question and hypothesis in mind, two functional prototypes were developed. The control group, which contained no inter-instructional assessment questions, and the treatment group, which contained at least one inter-instructional assessment question each section. Aside from the inclusion or exclusion of inter-instructional assessment questions, all content and its delivery was the same.

**Learners:**

There were twelve learners total, with five taking the control and seven taking the treatment. Each learner was asked to take pre- and post-instructional survey, in order to measure learner attitudes to the subject matter and the instructional materials. As the prototype was designed with a beginning learner of photography in mind, this choice would help keep the results indicative of the efficacy of the content. Interest in the subject matter wavered from neutral to strong interest (see Table 1).

The gender of our learners is 25% male and 75% female. The age range of our learners was varied, but did concentrate within the mid-twenties. Learners were asked to self-identify in a range of age groups, not a specific number, and the breakdown of ages is as follows: 2 learners: 18-21; 2 learners: 22-25 ; 4 learners: 26-30 ; 2 learners: 31-40 ; 1 learner: 41-50 ;1 learner: 50+.

Table 1: Response to question, “I have an interested in photography” from the pre-instructional survey.

**Treatments:**

**Overall**:

As much of the content materials were photos, the overall design of the functional prototype was designed to be as neutral as possible, so as to not outshine the photographs or to visually overload the learner. White borders were also employed on the larger photographs to give the learners a spatial sense of where the photograph begins and ends. The registration page was the first page that the learners viewed, followed by the title and welcome pages, and then the Table of Contents (Figure 1).

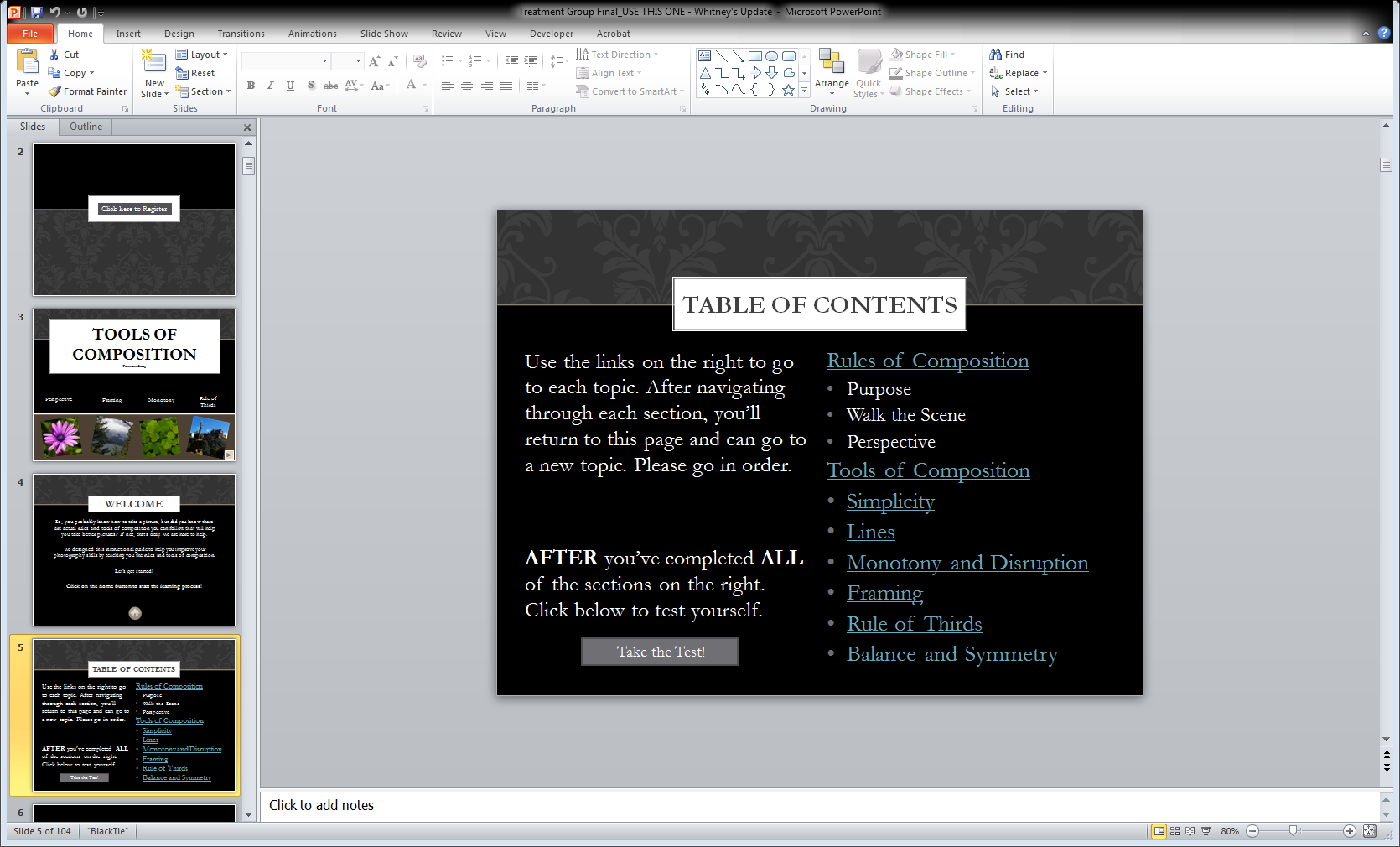


Figure 1: Registration, Title Page, Welcome Page, shown at left. Table of Contents shown at large.

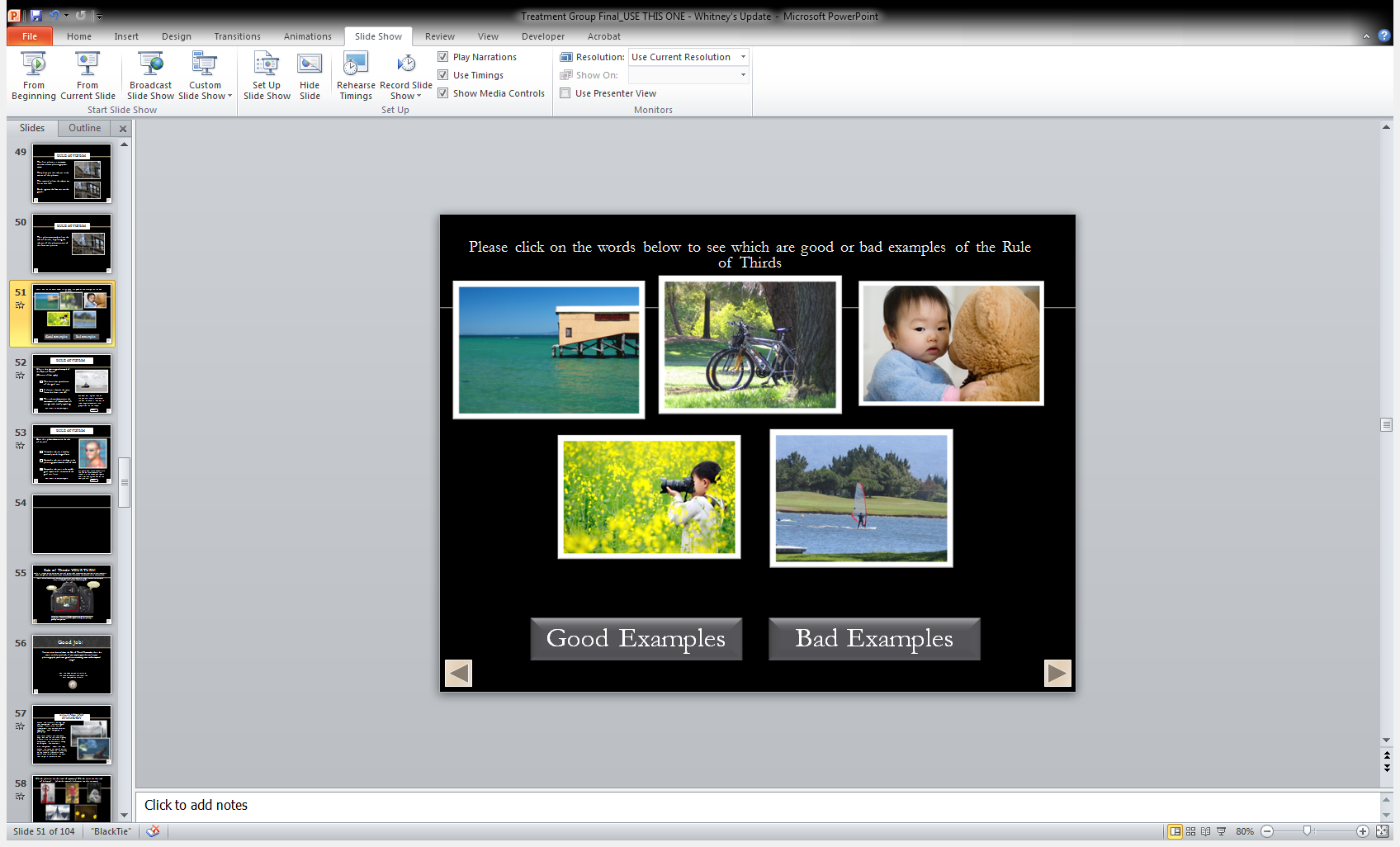
The content was divided into chapters for two reasons. First, if a learner were to begin the instructional unit, but was unable to complete it in one sitting, the individual chapters would allow the learner to come back and easily navigate to where they left off. Second, once the unit has been completed in its entirety, the chapter layout would allow the learner to easily review areas as needed, without unnecessary scrolling or flipping.

While the content is arranged in the most logical manner, with the Rules of Composition, followed by the Tools of Composition, the material can be viewed in any order that the learner wished. For purposes of the trials, learners were asked to complete the materials in the predetermined order, and to complete the instructional unit in one sitting.

Although the control group did not have the inter-instructional assessment questions, there were activity slides that were present in both the control and treatment groups. The only activity slide presented to the control group was the “wiggle” slides (Figure 2). “Wiggle” slides showed five photos, which could either be good or bad examples of the tool that was being taught. The learner simply needed to click the box with “Good Examples” or “Bad Examples” to see the corresponding photos wiggle on the page.

The second activity slide, which was not presented to the control group, was designed to simulate the real-world problem of making a composition with a camera simulator, which allowed learners to look through the viewfinder and apply what the content recently covered by choosing between three different compositions of the same scene (Figure 3).

Figure 2: “Wiggle” slide for Rule of Thirds.

In both the treatment and control group, after the learner had completed going through the content, they were guided to the post-test, which has twenty questions (14 application questions, and 6 recall questions), with immediate feedback (Figure 4).

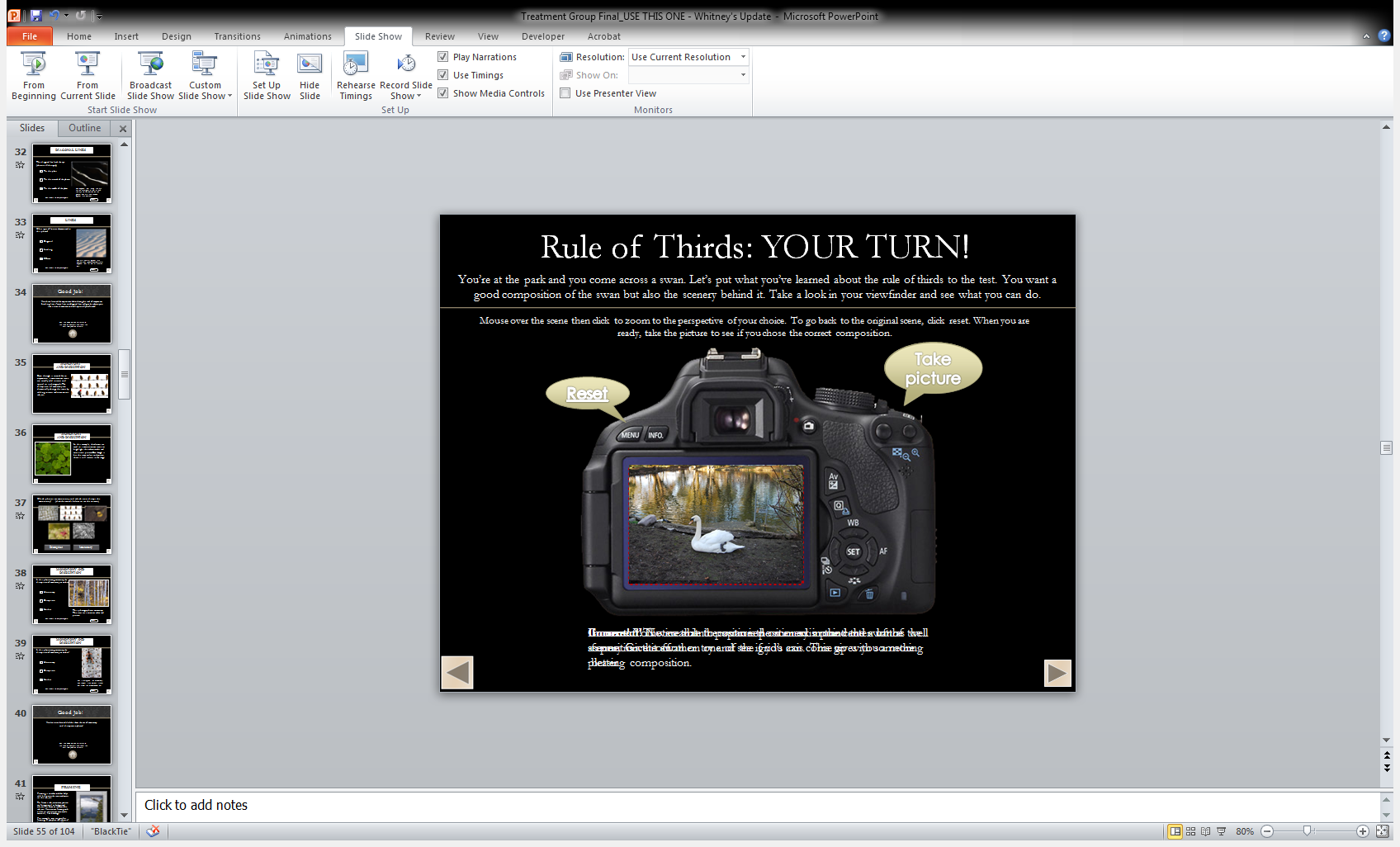
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Figure 3: Camera Slide for Rule of Thirds

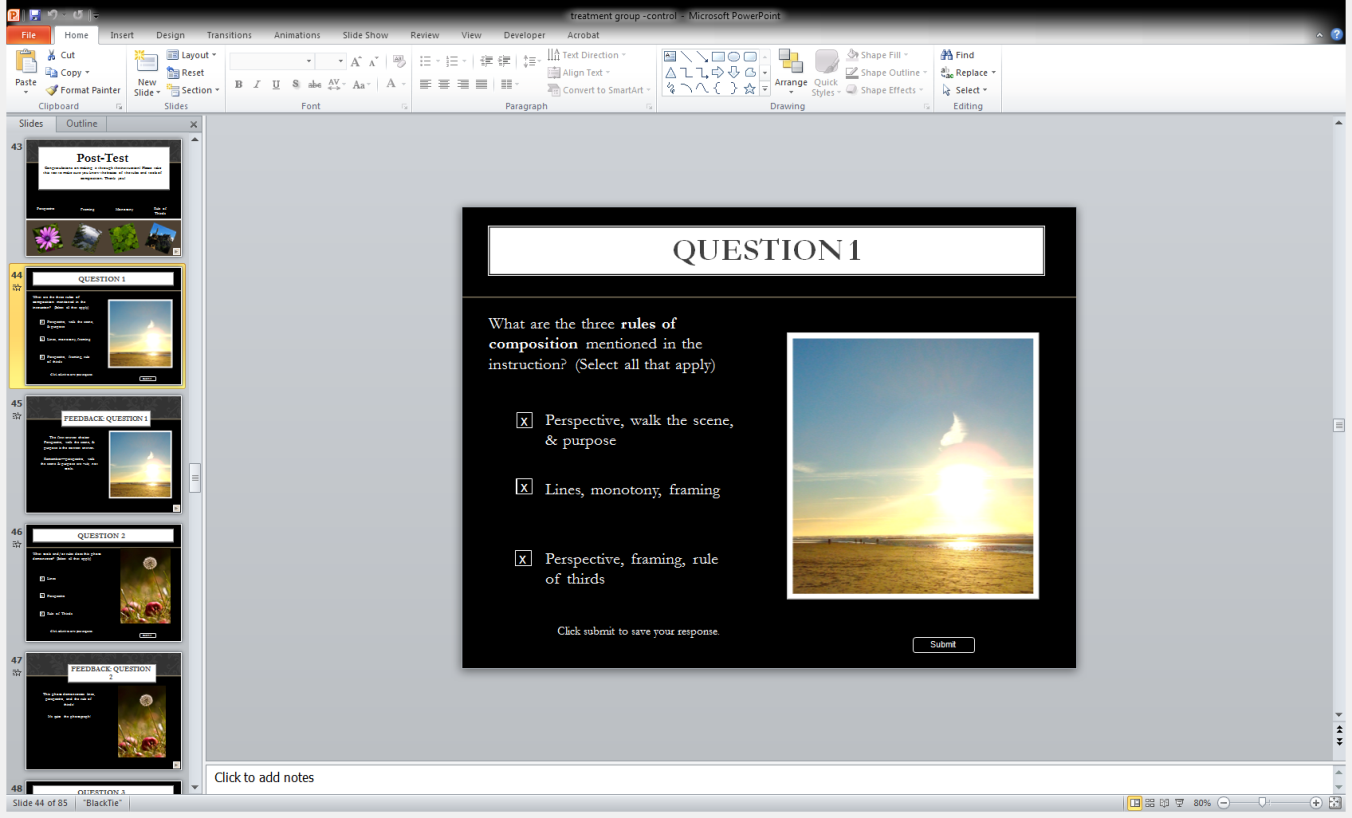


Figure 4: Post-test title page, Questions 1 and 2, with feedback slides shown at left, Question 1 shown at large.

**Treatment Group:**

The treatment group had a total of 13 inter-instructional assessments with feedback (Figure 5). The feedback provided reminded the learners of what was presented within the content, but did not provide additional instruction. This was to ensure that both the control and treatment group had the same amount of instruction.

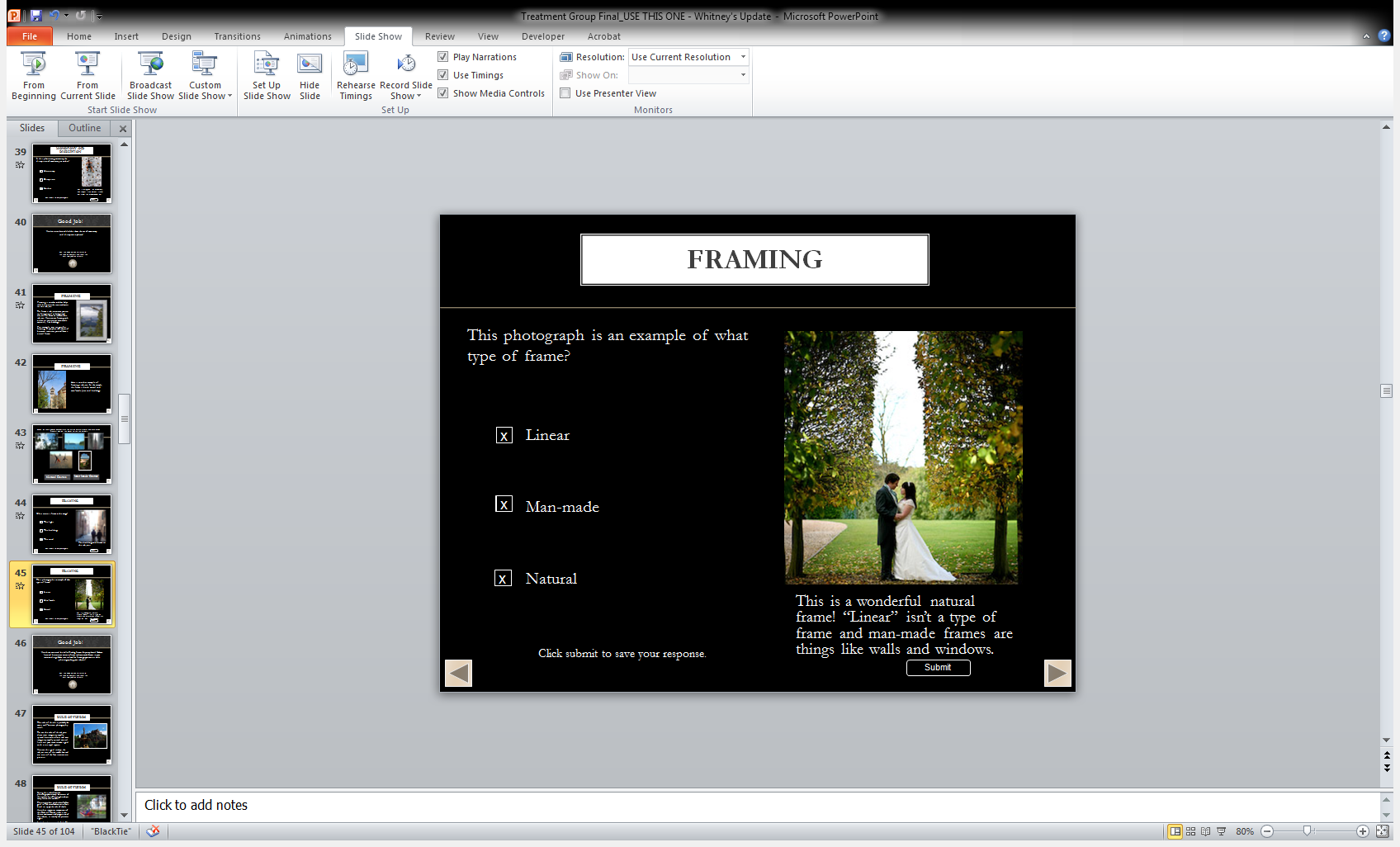


Figure 5: One of two “Framing” inter-instruction assessment questions. The feedback is shown at the bottom right, and appears after the learner presses the Submit button.

**Measures:**

**Effectiveness Data:**

The slides used to collect data are as follows (slides that have been previous illustrated via figure will not be illustrated again):

* Register slide, with the macros to type in the learner’s name, and the corresponding drive to save the data response file to with the start and end times, and responses to the questions
* Google docs for the pre-and post- surveys (Figure 6)
* The inter-instructional slides in the Treatment group
* The Post-test in both the Treatment and Control group

Data was not collected on the “Wiggle” or camera practice slides.

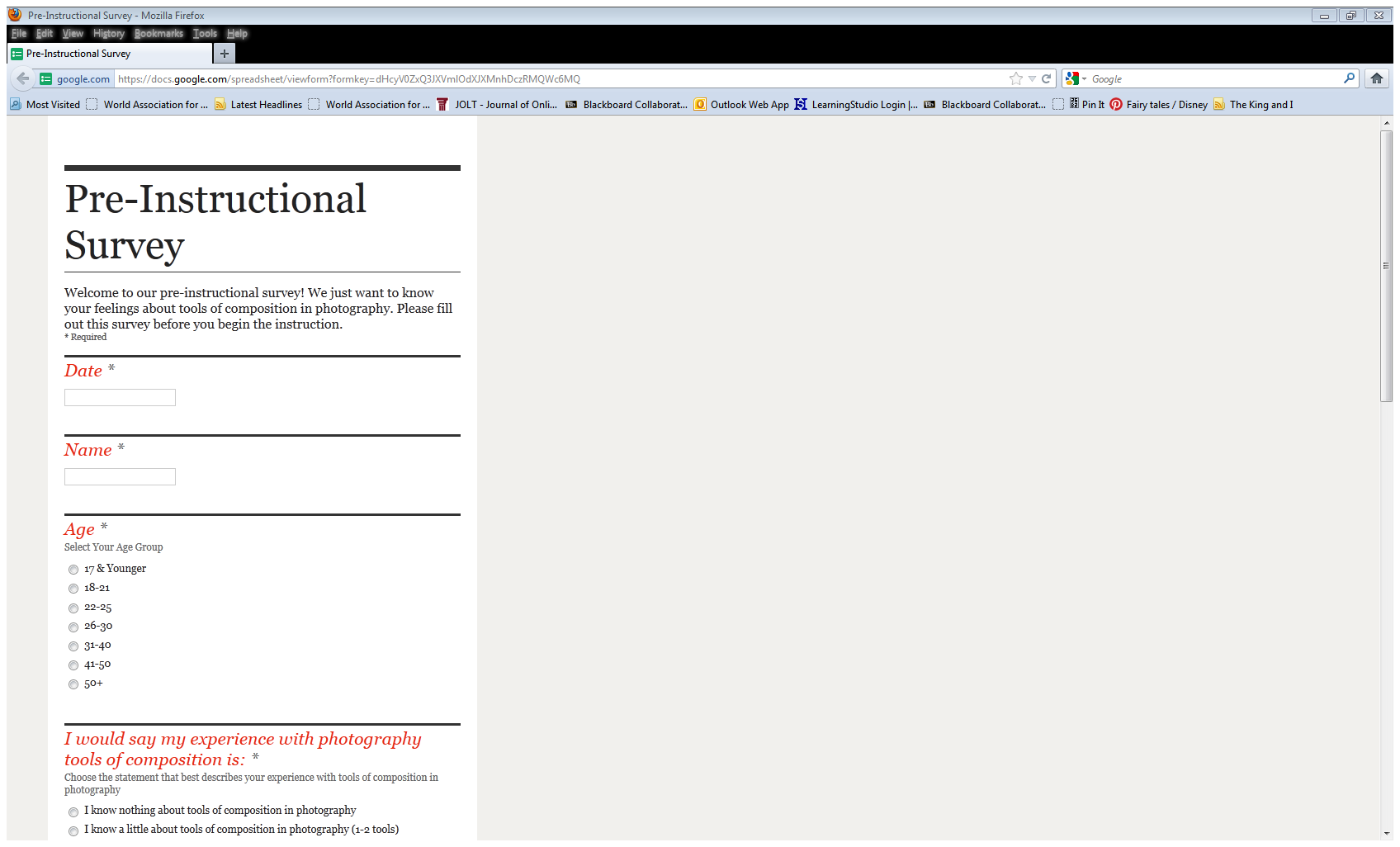


Figure 6: Pre-Instructional Survey shown

**Efficiency Data:**

Through use of the register macros and the data response file, the exact start and end of each learner was recorded in the data file. The shortest amount of time to complete the unit was 18 minutes, by a learner who took the control unit. The longest amount of time to complete the unit was a little over an hour, by a learner who took the treatment group (but was also noted as having been interrupted). The average completion time for both the treatment and control groups is around 30 minutes.

**Engagement Data:**

***Pre-survey***

In the pre-instructional survey, the learner’s attitudes towards the subject matter, using computer based instructional tools, and the learning situation were assessed. For all four engagement questions, the learner’s overwhelmingly responded that they agreed with the statements (Table 2). Only one learner responded that she was uncomfortable with computer-based instructional tools—she also happened to be our oldest participant and took the second longest on the instructional content. There may be a correlation between those factors, but we would need to test other learners of similar dispositions. It should be noted that she was in the treatment group and scored 18/20, which was one of our top scores.

Table 2: Responses to attitude questions from the pre-instructional survey.

***Post-survey***

After the learners completed the post-test, they were asked to take a post-instructional survey to conclude their thoughts on the material and their experience. Questions were asked regarding the material, as well as their attitudes towards the material before and following instruction (Table 3). The questions were measured on a scale of 1 to 5, with 1 being the lowest/negative response, and 5 being the most positive.

After the above questions were asked, learners were asked to assess the strengths of the instruction. The most common praise was that the photographs included in the instruction were clear and helped demonstrate the concepts. A secondary comment was the wording was conversational and easy to read.

Learners were also given the opportunity to comment on areas of improvement for the instruction. Common requests were more examples, stronger coloring of picture option outlines for the camera simulation slides, and greater clarification if more than one answer could be selected on the post-test questions.

Table 3: Average Score for Post-Instructional Survey

**Procedures:**

The learners were randomly assigned if they would take the treatment and the control group, which accounts for the uneven split of 5:7. Learners were seated at a computer that had the assigned prototype, and given simple instructions on how to navigate through the prototype, as well as a reminder to move through the content at their own pace, and to review any materials as needed prior to taking the final assessment.

The data was collected in a two pronged process. The first was to use data response recording macros embedded within the instructional content. This insured that the learner’s responses to the pre-assessment and assessment questions would be recorded. The second prong was to utilize Google docs to create a pre-and post-instructional survey, where we could record learners’ attitudes toward the subject matter and functional prototype.

**Results:**

|  |  |  |
| --- | --- | --- |
| Score | Control | Treatment |
| 13/20 | Learner SS |  |
| 13/20 |  | Learner TC |
| 14/20 |  | Learner NL |
| 15/20 | Learner C |  |
| 16/20 | Learner SL |  |
| 16/20 | Learner E |  |
| 16/20 |  | Learner H |
| 16/20 |  | Learner JG |
| 17/20 |  | Learner NS |
| 18/20 |  | Learner DK |
| 18/20 | Learner CP |  |
| 18/20 |  | Learner MH |

Table 4: Final Scores for all learners.

The mean for the Control group was 15.6, with a standard deviation of 1.62. The mean for the Treatment Group was 16, with a standard deviation of 3.14. The small standard deviation is likely due to the small sample size. Our research question, which centered on if learners who had the inter-instructional assessments would score better on the post-test than learners who did not have them, and the hypothesis that the learners in the treatment group *would* do better is shown to be correct, but only slightly. Other issues will be raised in the Discussion portion of this study.

**Discussion:**

A trend that was present in the post-test, for both learners in the control and treatment group, is that questions that had more than one right answer were consistently missed. This could be due in part to poor wording in the question directions and tricky wording in the answer choices. For example, Learner NL, who was in the treatment group and scored 14/20, only missed the questions with multiple correct answers.

Based off the results, there does seem to be some correlation between a higher score and inter-instructional assessment questions. A limitation of this particular study was due to the same sample size. If we were able to assess this with a larger sample size, the results would likely be more indicative of if the hypothesis was correct or not.